

REMARKS/ARGUMENTS

In response to the Office Action dated May 17, 2006, claims 1 and 2 have been amended.

Claims 1-3 are now active in this application. No new matter has been added.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 1-3 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. In support of this position, the Examiner refers to “wherein a spring for causing the piston to resonate is eliminated” as being a “negative limitation” that is improper to claim.

However, Applicants respectfully disagree that claiming a negative limitation is improper and direct attention to MPEP § 2173.05(i) Negative Limitations:

The current view of the courts is that *there is nothing inherently ambiguous or uncertain about a negative limitation. So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. § 112, second paragraph* (Emphasis Added). ...

A claim which recited the limitation "said homopolymer being free from the proteins, soaps, resins, and sugars present in natural Hevea rubber" in order to exclude the characteristics of the prior art product, *was considered definite* because each recited limitation was definite (Emphasis Added). *In re Wakefield*, 422 F.2d 897, 899, A04, 164 USPQ 636, 638, 641 (CCPA 1970). In addition, the court found that the negative limitation "incapable of forming a dye with said oxidized developing agent" *was definite* because the boundaries of the patent protection sought were clear. *In re Barr*, 444 F.2d 588, 170 USPQ 330 (CCPA 1971) (Emphasis Added).

Any negative limitation or exclusionary proviso must have basis in the original disclosure. ... The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Note that a lack of literal basis in the specification for a negative limitation may not be sufficient to establish a *prima facie* case for lack of descriptive support. *Ex parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Inter. 1993). See MPEP § 2163 - § 2163.07(b) for a discussion of the written description requirement of 35 U.S.C. § 112, first paragraph

To expedite prosecution, claims 1 and 2 have been amended to recite, *inter alia*:

... the Stirling engine including no spring for causing the piston to resonate, ...

The basis for the current recitation is provided at, for example, paragraph [0005] of the amended PCT application, which describes:

[0005] To achieve the above object, according to the present invention, a Stirling engine is structured as follows: in a Stirling engine including a displacer that moves inside a cylinder between a compression space and an expansion space and a piston that is made to reciprocate inside the cylinder by a driving force source, wherein the piston reciprocates to cause the displacer to reciprocate to cause working gas to move, *a spring for causing the piston to resonate is eliminated*, and rotation preventing means is provided for preventing the piston from rotating about an axis thereof inside the cylinder. (Emphasis Added)

Thus, claims 1 and 2, as amended, recite the invention with the degree of precision and particularity required by the statute. Therefore, it is respectfully urged that the rejection be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 102

I. Claim 1 has been rejected under 35 U.S.C. § 102(b) as being anticipated by JP 2003-50058. The Examiner has asserted, “Since the axis recited in the claim is not limited to the longitudinal axis of the cylinder, the claims read upon a axis perpendicular to the longitudinal axis of JP 2003-50058.”

To expedite prosecution, independent claim 1 has been amended to recite:

A Stirling engine including a displacer that moves inside a cylinder between a compression space and an expansion space and a piston that is made to reciprocate inside a cylinder by a linear motor, the piston reciprocating to cause

the displacer to reciprocate to cause working gas to move, the Stirling engine including no spring for causing the piston to resonate,

wherein rotation preventing means is provided for preventing the piston from rotating inside the cylinder about an axis common to the piston and the cylinder.

As seen in Figs. 1 and 5 of the present application, piston 12 is provided in cylinder 10.

If piston 12 rotates within cylinder 10, it would rotate about an axis common to piston 12 and cylinder 10. The rotation preventing means prevents piston 12 from rotating inside cylinder 10 about the axis common to the piston and the cylinder.

With respect to the piston and cylinder of JP 2003-50058, no rotation preventing means is disclosed that would prevent the piston from rotating inside the cylinder about an axis common to the piston and the cylinder. Furthermore, spring 9 of JP 2003-500 is a spring that causes the piston to resonate, which amended independent claim 1 delineates is NOT present. Thus, amended independent claim 1 is patentable over JP 2003-50058.

II. Claims 1-2 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Beale et al. (USPN 5,537,820). The Examiner has maintained that Beale et al. teaches, in Fig. 2, a Stirling engine having a displacer 42 and a piston 40, and that movement restricting means are provided for setting a limit of movement of the piston.

As noted above, amended independent claim 1 delineates, *inter alia*, that a rotation preventing means is provided for preventing the piston from rotating inside the cylinder about an axis common to the piston and the cylinder. No such rotation preventing means is provided in Beale et al. for an axis common to piston 40 and cylinder 44. Thus, amended independent claim 1 is patentable over Beale et al.

To expedite prosecution, independent claim 2 has been amended to recite:

A Stirling engine including a displacer that moves inside a cylinder between a compression space and an expansion space and a piston that is made to reciprocate inside a cylinder between the compression space and a bounce space by a linear motor, the piston reciprocating to cause the displacer to reciprocate to cause working gas to move, the Stirling engine including no spring for causing the piston to resonate,

wherein movement restricting means is provided for setting a limit of movement of the piston toward the bounce space.

In amended independent claim 2, the piston is made to reciprocate inside a cylinder between the compression space and a bounce space, and a movement restricting means is provided for setting a limit of movement of the piston *toward the bounce space.*, which corresponds to second space 50 of Beale et al.

In the Office Action, the Examiner has maintained that in Beale et al., “movement restricting means are provided for setting a limit of movement of the piston 40” (of FIG. 2). However, it is not apparent, and the Examiner has failed to identify, what elements make up such movement restricting means and how they set a limit of movement of the piston 40 *toward a bounce space* (second space 50). What is disclosed in Beale et al. is that *piston 40 is prevented from moving inward towards the working space 48* beyond TDC (top dead center) by uncovering port 58 which allows gas to be drawn from second space 50 into the reservoir 54. However, work space 48 is not a bounce space and corresponds to compression space 45 of the present application.

Beale et al. does not disclose a movement restricting means provided for setting a limit of movement of piston 40 toward the bounce space (second space 50). Thus, amended independent claim 2 is patentable over Beale et al., as is dependent claim 3.

III. In view of the above, the allowance of claims 1, 2 and 3, as amended, is respectfully solicited.

CONCLUSION

Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney, Edward J. Wise (Registration No. 34,523), at the telephone number shown below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: August 17, 2006

Respectfully submitted,

By 
Charles Gorenstein
Registration No.: 29,271
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant


CG/EJW/vd